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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Shang-Hyeun Park

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EXAMINER

GUHARAY, KARABI

ART UNIT

PAPER NUMBER

2879

MAIL DATE

DELIVERY MODE

07/06/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/743,791

Applicant(s)

PARK ET AL.

Examiner

Karabi Guharay

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment, filed on 4/25/07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 4/25/07.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Response to Amendment

Amendment, filed on 4/25/07 has been considered and entered.

Claims 1 & 2 are amended. Currently claims 1-6 are pending.

Amendment of specification has been acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duboc, Jr et al. (US 5541473), and further in view of Applicant's admitted prior art (AAPA).

Regarding claim 1, Duboc discloses a field emission device (Fig 2) comprising an anode plate (250) having an anode electrode (221 of Fig. 2 or 121 of Fig 1) and a fluorescent layer (122, 222a) formed on the anode electrode (see Fig 1), a cathode plate (201) where an electron emission source (202a, 202b) emitting electrons toward the fluorescent material layer and a gate electrode (212b) having a gate hole (211a, 211b) through which electrons travel; mesh grid (214-218, lines 23-44 of column 6, see grids of US 5424605 also see Fig 7E) having an electron control hole corresponding to the gate hole (211a, 211b) and adhered to the cathode plate, and an insulation layer (213) formed on a surface of the mesh grid (214) facing the cathode plate (see figure 1); and spacers (230) provided between the anode plate and the cathode plate where spacers

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are bonded in a region where phosphors are not formed, and supported by mesh grid (see figure 1) and the mesh grid contacts the cathode plate.

Though it is not explicitly specified that the spacers provide adherence of the grid to the cathode plate due to negative pressure existing between the anode plate and the cathode plate, Duboc teaches indirectly that the insulating spacer 230 supports the force caused by the differential pressure between the internal vacuum pressure and the external atmospheric pressure outside the flat CRT, further teaches that in FIG. 2, the spacer 230 is long compared to the spacing of prior art flat CRTs which use proximity focusing, which implicitly indicates that the adherence of grid close to the cathode plate is possible due to the negative pressure existing between anode and cathode plate and the spacer hold the mesh grid in that position that is the reason for having a long spacer (see lines 37-46 of column 8).

Further Duboc fails to teach black matrix layer formed on the anode electrode where spacers are bonded to the black matrix.

However, in the same field of FED display, AAPA discloses that it is conventional (in other words well known) to have phosphor and black matrix layer formed alternately on the anode electrode (see Fig 1) and the spacers are bonded to the region of the black matrix. It is further known in the art that the black matrix layers are formed between phosphor layers to provide excellent contrast in the image.

Thus, it would have been obvious to one having ordinary skill in the art the time the invention was made to incorporate black matrix layers on the anode electrode in

between phosphor layers as taught by AAPA, in the device of Duboc since this will improve the quality of image by enhancing the contrast.

Regarding claims 2, Duboc teaches that grid is formed of thick metals, however, does not specifically mention invar. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use invar, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. See MPEP 2144.07.

Regarding claims 3 & 4, Duboc Jr. discloses that the insulating layer (213) formed on the mesh grid (214-218), and is formed of ceramic (lines 56-59 of column 7), however, does not specifically mention silicon dioxide, however, it is well known that silicon dioxide is an insulating ceramic material widely used as insulating layers in FED devices.

Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to choose silicon dioxide as the insulating ceramic material since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. See MPEP 2144.07.

Further recitation "formed by printing" is drawn to a process of manufacturing, which is incidental to the claimed apparatus.

Even though product by process claims are limited by and defined by the process, determination of patentability is based on the product. It is well established that a claimed apparatus cannot be distinguished over the prior art structure by a process limitation. Consequently, absent a showing of an unobvious difference between the

claimed product and the prior art, the subject process limitation is not afforded patentable weight (see MPEP 2113).

Regarding claims 5 & 6, Duboc Jr. discloses that the insulating layer (213) formed on the mesh grid (214-218), and directly contacts the mesh grid.

Response to Arguments

Applicant's arguments filed 4/25/07 have been fully considered but they are not persuasive.

Applicant's argument presented for claim 1 is moot in view of new limitations added to claim 1. See rejection of amended claim 1 presented above.

Further in response to applicant's argument that ceramic and silicon dioxide are not necessarily interchangeable, examiner respectfully presents that office action states that "Duboc discloses ceramic material, which includes silicon dioxide" meaning silicon dioxide is a ceramic material. Silicon dioxide, aluminum oxides are well known insulating ceramic material (see relevant page of Wikipedia and also see US 6620216).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karabi Guharay whose telephone number is 571-272-2452. The examiner can normally be reached on Monday-Friday 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

K. Guharay
Karabi Guharay
Primary Examiner
Art Unit 2879

6/27/07